IN THE UNITED STATES PATENT AND TRADEMARK OFFICE

Applicant : Yasuhiro NAKANO et al. **Confirmation No.: 9439**
Group Art Unit: 1723
Serial No : 10/567,022 (National Stage of PCT/JP2004/011165
Filed : July 14, 2006 Examiner: Kim, Sun U.
For : COMPOSITE POROUS MEMBRANE AND PROCESS FOR PRODUCING THE SAME

SECOND SUPPLEMENTAL PRELIMINARY AMENDMENT

Commissioner of Patents
U.S. Patent and Trademark Office
Customer Service Window, Mail Stop Amendment
Randolph Building
401 Dulany Street
Alexandria, VA 22314

Sir:

Prior to the examination of the above-identified patent application on the merits and supplemental to the Preliminary Amendments filed February 3, 2006 and July 14, 2006, the Examiner is respectfully requested to amend the claims as follows:

Amendments to the Claims are reflected in the listing of claims which begins on page 2 of this paper.

Remarks begin on page 6 of this paper.

Amendments to the Claims:

This listing of claims will replace all prior versions, and listings, of claims in the application:

Listing of Claims:

1. (Original) A composite porous membrane, which comprises at least one porous membrane comprising an organic polymer and at least one supporting porous membrane adjacent thereto,

wherein the organic polymer constituting the porous membrane penetrates into at least a portion of the surface of the supporting porous membrane adjacent to the porous membrane, and

when the membrane flat surface of the porous membrane is observed using a photomicrograph, the porous membrane has an opening ratio between 10% and 90%, an average pore diameter D (μm) of $0.1 \leq D \leq 50$, a standard deviation σd (μm) of pore diameter of $0 \leq \sigma d/D \leq 0.6$, and the percentage of through-pores to all the pores of the porous membrane of 30% or more; when a membrane section thereof is observed using a photomicrograph, the porous membrane has an average membrane thickness T (μm) defined by $0.05 \leq T/D \leq 2$ and a structure in which pores adjacent to one another communicate with one another therein; and the supporting porous membrane has continuous pores with an average pore diameter of 0.5 D (μm) or more.

2. (Original) The composite membrane according to Claim 1, wherein the porous membrane has an average membrane thickness T (μm) of $0.1 \leq T \leq 50$, and the supporting porous membrane has an average pore diameter of 1 μm or more.

3. (Previously Presented) The composite membrane according to Claim 1, wherein the porous membrane has an average pore diameter D (μm) of $0.1 \leq D \leq 20$ and an average membrane thickness T (μm) of $0.1 \leq T \leq 20$, and the supporting porous membrane has an average pore diameter between 1 and 100 μm and wherein a standard deviation σt (μm) of the membrane thickness is defined by $0 \leq \sigma t/T \leq 0.5$.

4. (Previously Presented) The composite porous membrane according to claim 1, wherein the porous membrane has an opening ratio between 15% and 80% and an average pore diameter D (μm) of $0.5 \leq D \leq 20$.

5. (Previously Presented) A blood filtration membrane comprising the composite porous membrane according to claim 1.

6. (Previously Presented) A cell culture diaphragm comprising the composite porous membrane according to claim 1, which partitions different cell groups in a cell culture solution so that the different cell groups come into contact with each other, and which is used for co-culture of the cells.

7. (Previously Presented) A process for producing the composite porous membrane according to claim 1, which comprises steps of: allowing a supporting porous membrane to retain a liquid that is not compatible with a solution of an organic polymer in a hydrophobic organic solvent; casting the solution of the organic polymer in the

hydrophobic organic solvent on the supporting porous membrane; and evaporating the hydrophobic organic solvent in an environment wherein a relative humidity is between 20% and 100% near the membrane, so as to form a porous membrane containing said organic polymer as a main component on the supporting porous membrane.

8. (Original) The process according to Claim 7, wherein the liquid that is not compatible with the solution of the organic polymer in the hydrophobic organic solvent is water.

9. (Previously Presented) A process for producing a hemocyte suspension from which leukocytes have been removed, which comprises: passing a hemocyte suspension to be treated through a first filter with a capability of removing leukocytes between 1.0 and 3.5 for 450 cm^3 of the hemocyte suspension to be treated; and then passing the whole hemocyte suspension discharged from the first filter through a second filter comprising one or more composite porous membranes according to claim 1.

10. (Previously Presented) A leukocyte removal filter device comprising a first filter disposed on the entrance side of the hemocyte suspension to be treated and a second filter disposed on the exit side thereof, wherein the first filter has a capability of removing leukocytes between 1.0 and 3.5 for 450 cm^3 of the hemocyte suspension to be treated, and the second filter comprises one or more composite porous membranes according to claim 1.

11. (Original) The leukocyte removal filter device according to Claim 10, wherein the effective area of the second filter is between 4 and 300 cm^2.

12. (Previously Presented) The leukocyte removal filter device according to Claim 10, which has a filter element with a volume between 2 and 18 cm^3.

13. (Previously Presented) The leukocyte removal filter device according to claim 10, which has a capability of removing leukocytes of 4.0 or more for 450 cm^3 of the hemocyte suspension to be treated.

14. (Previously Presented) A process for culturing cells, which comprises: disposing the composite porous membrane according to claim 1 in a cell culture solution to establish at least two culture regions; introducing different cell groups into the at least two culture regions adjacent to each other, respectively, and co-culturing the cells.

15. (New) A cell co-culture device comprising the cell culture diaphragm according to claim 6, which divides different cell groups in a cell culture solution in a state where they are allowed to come into contact with each other, so as to co-culture the cells.

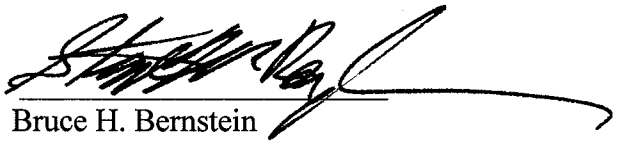
16. (New) A cell co-culture device comprising an integrated cup-type culture container which comprises the cell culture diaphragm according to claim 6 and a tube having said cell culture diaphragm adhered to one end face of said tube, and a container which can hold said cup-type culture container and a cell culture solution inside.

Remarks

By the above amendment, claims 15 and 16 have been added. Support for these newly added claims can be found throughout the specification, for example on page 88, line 25 through page 92, line 1 and in example 8 on pages 120-121. No estoppel should be deemed to be associated with this amendment.

If there should be any questions, the Examiner is invited to contact the undersigned at the telephone number listed below.

Respectfully submitted,
Yasuhiro NAKANO et al.



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